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### Readability of the Transactional Texts in *Bahasa Inggris* Textbook for Grade X

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#### ABSTRACT

This paper aims are lexical density and grammatical intricacy of the transactional texts in Bahasa Inggris as one of the English textbooks for senior high students (grade X) in Indonesia. The method applied is qualitative research method. The study supported by three methods in determining readability as proposed by Halliday (1985, 1994, 2004), Ure (1971), and a text analyzer adapted from [www.usingenglish.com](http://www.usingenglish.com) as the website that provided the tool. The data are taken from the textbooks as transactional texts. The texts obtained are six transactional texts. The results of the study have shown several valuable insights. Firstly, the transactional text that has the highest number of words (530 words) containing highest number of sentences could be categorized into the spoken text (lexical density= 26.44) and the level is under Easy Reading Range (Fog Index = 4.23) as described in T6. Secondly, the total unique words in transactional text has relation with hard words, lexical density and Fog Index as described in the T2. Thirdly, the lowest number of words could relate to the unique words and total number of sentences (as seen in T4). To choose the transactional text given as the material in Bahasa Inggris, it is suggested that the writer of the textbooks should be more thoughtful in deciding the transactional texts level chosen since the data shows that the level of the text is various (Fog Index 4.23 as the lowest – 10.25 as the highest) and the average transactional text level is 6.7.

#### I. INTRODUCTION

Readability of texts are different from one to another since they are influenced by many factors. This subject has been discussed by [Khang, 2010](#); [Zasmanian & Heydari, 2012](#); [To et al., 2013](#); [Gulerer, 2016](#); [Sujatna et al., 2017](#); [Abbasian & Afrazi, 2018](#). The influenced factors could be grammatical intricacy or lexical density, as Richard (1992) argued that “Readability depends on several factors including the average length of sentences, the number of new words contained, and the grammatical complexity of the language used in a passage.”

Earlier research is done by To, et al., (2013). She did her research on “Lexical Density and Readability: A Case Study of

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English Textbooks”. She performed an investigation into the lexical density ([Halliday, 1985](#); [Ure, 1971](#)) and readability ([Flesch, 1948](#)) of four reading extracts from four English textbooks ([Anderson, 2003a, 2003b, 2003c, 2003d](#)).

The second research is Sujatna et al. (2017), they did their research on “The Readability Test of the English Children Short Stories”. They focused on Fog Index of the selected English children short stories. They found that the average of the Fog Index on the selected English children short stories is 4.98.

People, sometimes, decide that a text is easier or harder to understand based on their intuition. Of course, it is hard to prove that their arguments are accurate since they have different

experience and ability in understanding the text, so that, it cannot be proven scientifically. To prove scientifically in understanding the text, we can refer to the lexical density of the text. The lexical density is various in every text. As Halliday (1985) mentioned that “The concept of density refers to a kind of complexity that results from the development of words. In other words, this relates to the notion of lexico-grammar in terms of the level of wording in language”.

The classification of the data of this research is based on some elements, such as, the total word count or the hard words involved in the texts. The study’s purposes are to identify how readability is realized in the selected transactional texts and to investigate the relationships among readability, lexical density, and text levels. The transactional texts are obtained from Bahasa Inggris for Grade X (revised edition, 2017). The textbook is one of

the textbooks published by *Kementrian Pendidikan dan Kebudayaan Republik Indonesia* or The Ministry of Education and Culture Indonesia in 2017 as the revised edition. The study also concerns the correlation between measurements of lexical density and readability, and uses a combination of two methods in examining lexical density as indicated by Ure (1971) and Halliday (1985) as mentioned by To *et al.* (2013). For the identifying the reading level, this research refers to Heydary’s table (2012).

Texts can be classified into spoken language and written language. Both of the texts are different, they have own characteristics of each. The words spoken and written texts are the terms borrowed from Halliday (2004) and Gerot and Wignell (1995). As Eggins (1994) argued both spoken and written language as described in the following:

**Table 1.** Spoken and Written Language (Eggins, 1994)

Spoken language	Written language
Low lexical density few content-carrying words as a proportion of all words High grammatical intricacy many clauses per sentence	High lexical density many content-carrying words as a proportion of all words Low grammatical intricacy few clauses per sentence

It is in line with Gerot and Wignell’s (1995) argument. They argue that there are differences between spoken and written text as the following argumentation

*“Spoken and written languages are both complex but in different ways. Spoken language tends to be complex grammatically and written language tends to be complex lexically. Spoken language tends to be grammatically intricate whereas written language tends to be lexically dense”.*

The arguments mentioned that spoken and written are not similar, they are differentiated by the lexical density and the grammatical intricacy; the written texts tend to be lexically dense while the spoken texts tend to be grammatically intricate. This argument is also supported by Halliday (2004) in Presnyakova (2011). They argued that written language text is more complex than the spoken one, as described in the following.

*“Typically, written language becomes complex by being lexically dense: it packs a large number of lexical items into each clause; whereas spoken language becomes complex by being grammatically intricate: it builds up elaborate clause complexes out of parataxis*

*and hypotaxis.”*

To count the index of Grammatical Intricacy (GI), Halliday (1985) described the total number of ranking clauses is divided by the total number of clauses complexes of the texts as explained in the following formulae in the Figure 1:

$$GI \text{ (index)} = \frac{\text{Total number of ranking clauses}}{\text{Total number of clause complexes}}$$

**Figure 1.** Grammatical Intricacy Formulae in Halliday (1985)

From the formulae above, it is described that the GI is the result of total number of ranking clauses which divided by total number of clause complexes. Ranking clause refers to each clause found in the text, so that total number of ranking clause means the total number of the clauses found in the text. The term of clause complex is introduced by Halliday in line with Tãm (2013) argued that

“A clause complex is made up of clauses. In order to answer the question: what makes the clause complex, some attempt is made to examine the notion of clause, the combination of clauses to make up the clause complex, and a brief distinction between the notion of clause

complex and the traditional notion of sentence as well.”

From the definition above it could be concluded that clause complex has the same meaning with sentence then the total number of clause complexes means the total number of sentences (in traditional notion). Then, the GI is the result of the total number of clauses is divided by the total number of clause complexes (sentences), for example, if a text containing five sentences and 10 clauses, then the GI (index) becomes 2.

Lexical Density (LD) or sometimes defined as complexity factor as Halliday (1985) mentioned that “Lexical density is the kind of complexity that is typical of written language”. LD is used to scale the difficultness of a text. Texts with a higher density are more difficult understood. In this paper, the writers call it as LD. Johansson (2008) in his article titled *Lexical diversity and lexical density in speech and writing: a developmental perspective* mentioned that:

“By investigating this (lexical density), we receive a notion of information packaging; a text with a high proportion of content words contains more information than a text with a high proportion of function words (prepositions, interjections, pronouns, conjunctions and count words)”.

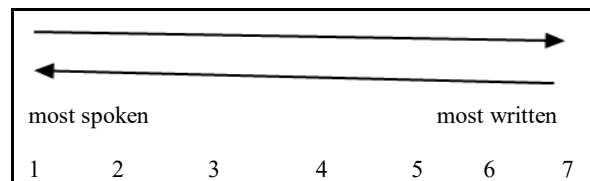
To count the LD of a text, Ure (1971) in Johansson (2008) described in the following formulae in Figure 2:

$$Ld (\%) = \frac{\text{total number of words with lexical properties}}{\text{total number of orthographic words}} \times 100$$

**Figure 2.** Lexical Density of Ure’s (1971) in Johansson (2008)

Referring to Ure (1971) in Johansson (2008), the Lexical Density (LD) which is that represented by a fraction of 100 could be counted by total number of words with lexical properties is divided by total number of orthographic words and multiply to 100. The term of lexical properties refers to different words or unique words while the orthographic words refers to words. If a text, for example, containing 3 words of *buy*, 2 words of *sophisticated*, 1 word of *lexical*, 4 words of *and*; it could be identified the total number of words with lexical properties are 4 and the total number of orthographic words is 10, then the Ld (%) is 40%. It is in line with Halliday (1985) states that “lexical density is the number of lexical items as a ratio of the number of clauses”.

To measure the spoken or written of the text, Cruickshank (2008) in Hertzberg (2012) which in line with Gerot and Wignell (1985) offered the Mode Continuum as described in the Figure 3.



**Figure 3.** Mode Continuum of Spoken and Written Texts

Besides the terminologies of lexical density and grammatical intricacy, there are also other terminologies related to readability. The other terminologies are total word count, number of sentences, average sentence length, number of paragraph, hard words, and Fog Index. Total word count means total number of words in the text while number of sentences means the total number number found in the text. Average sentence length means in every sentence has different length of sentence or number of words then it is the average of the length of sentences while number of paragraph is the total number of paragraph found in the text. Hard words in this research means the words that contains of three syllable more; it refers to the difficulty of the words understanding. Fog Index is introduced by Robert Gunning, so that sometimes people called it as Gunning Fog Index. Robert Gunning founded the first consulting firm specializing in readability in 1944 until now, the method still be applied by many writers to measure their writing. The following is the Gunning Fog Index which adapted from <http://www.usingenglish.com/resources/text-statistics.php> in Sujatna (2017). The following is the formulae used in counting Gunning Fog Index that relates closely to the grade of reading level.

$$\text{Reading Level (Grade)} = \left( \frac{\text{Average No. of words in sentences} + \text{Percentage of words of three or more syllables}}{2} \right) \times 0.4$$

**Figure 4.** Gunning Fog Index

The result of the counting by applying the above formulae in Figure 4, be applied as the reference in deciding the level of the texts (or estimated reading Grades as in Heydari, 2012) which refers to the Heydari’s table (2012) in Sujatna (2017) which is described in the Table 2.

**Table 2.** Fog Index and Estimated Reading Grades Heydari (2012) in Sujatna (2017)

<b>Fog-Index</b>		<b>Estimated Reading Grades</b>
17		<b>College graduate</b>
16		<b>College senior</b>
15		<b>College junior</b>
14		<b>College sophomore</b>
<b>Danger line</b>	<b>13</b>	<b>College freshman</b>
12		High school senior
11		High school junior
10		High school sophomore
Easy	9	High school freshman
Reading Range	8	Eighth grade
	7	Seventh grade
	6	Sixth grade

The estimated reading grade will be applied in deciding the level of the text in this research to measure the level of the text related to fog index in English textbook titled *Bahasa Inggris Kelas X* which is published by *Kementerian Pendidikan dan Kebudayaan, 2017*.

## II. METHOD

This research used *Bahasa Inggris* for grade X as the data source. This book is published and recommended by *Kementerian Pendidikan dan Kebudayaan Republik Indonesia* or Ministry of Education and Culture.

The data is limited on six transactional texts which taken from three chapters containing transactional texts. The six transactional texts are collected and identified of total word count, total unique words, number of sentences, average sentence length, and number of paragraphs of each.

After being identified, the data are analyzed through hard words, lexical density, and Fog Index by three methods in determining readability as proposed by Halliday (1985, 1994, 2004), Ure (1971), and Flesch (1948). Lastly, the data is classified referred to Heydari's Fog Index and Estimated Reading Grades (2012) in Sujatna (2017). This

parameter is applied to decide the level related the fog index found in the texts given. To crosscheck the calculating of the data, the writer also applies a text analyzer which adapted from [www.usingenglish.com](http://www.usingenglish.com) as the website provided the tool.

## III. RESULT AND DISCUSSION

The data mentioned in this research are six transactional texts which taken from *Bahasa Inggris* for grade X. The data are taken from chapter 1-3 and each of chapter has two transactional texts so it becomes six transactional texts as the data. From the six transactional texts, the writer found that the texts have different forms; two texts of writing letters and four texts of interactional texts. For differentiating one text to another, each text is named T1, T2, T3, T4, T5, and T6 following continuously from Chapter 1 to Chapter 3 in the text book.

The following is the result from the six transactional texts which are calculated by the text analyzer from [www.usingenglish.com](http://www.usingenglish.com). The result concerns two things, both Text Analyzer as the content of the text and Word Length Breakdown as the result of the letter words in every word in each transactional text.

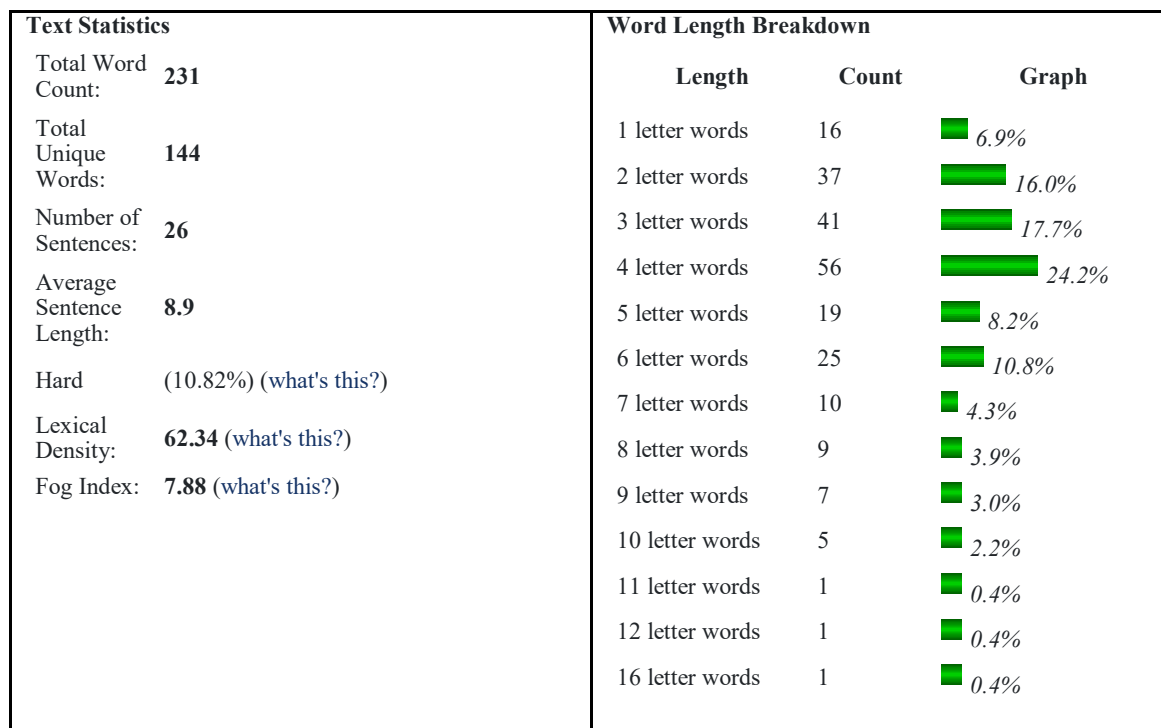


Figure 5. Text Statistics and Word Length Breakdown of Text 1

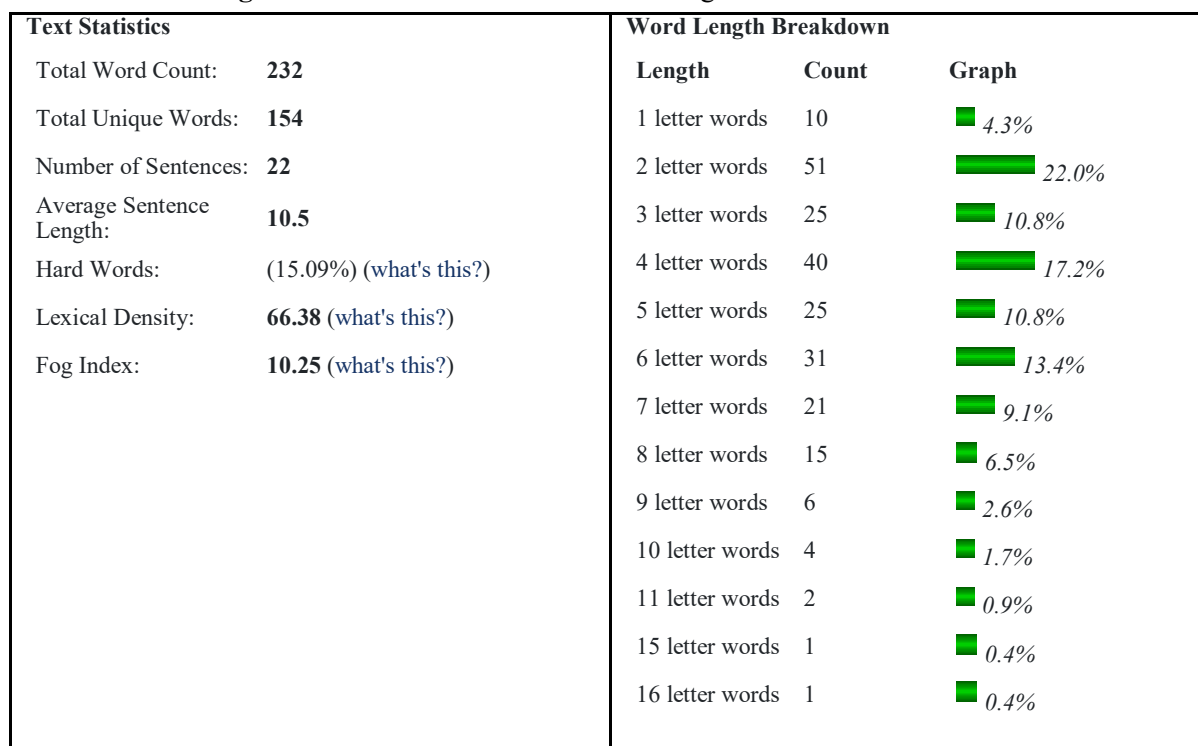


Figure 6. Text Statistics and Word Length Breakdown of Text 2

Text Statistics		Word Length Breakdown		
Total Word Count:	222	<b>Length</b>	<b>Count</b>	<b>Graph</b>
Total Unique Words:	126	1 letter words	11	5.0%
Number of Sentences:	31	2 letter words	27	12.2%
Average Sentence Length:	7.2	3 letter words	45	20.3%
Hard Words:	(10.36%) (what's this?)	4 letter words	57	25.7%
Lexical Density:	56.76 (what's this?)	5 letter words	27	12.2%
Fog Index:	7.01 (what's this?)	6 letter words	13	5.9%
		7 letter words	17	7.7%
		8 letter words	6	2.7%
		9 letter words	4	1.8%
		10 letter words	1	0.5%
		11 letter words	2	0.9%
		12 letter words	4	1.8%
		13 letter words	1	0.5%
		15 letter words	2	0.9%

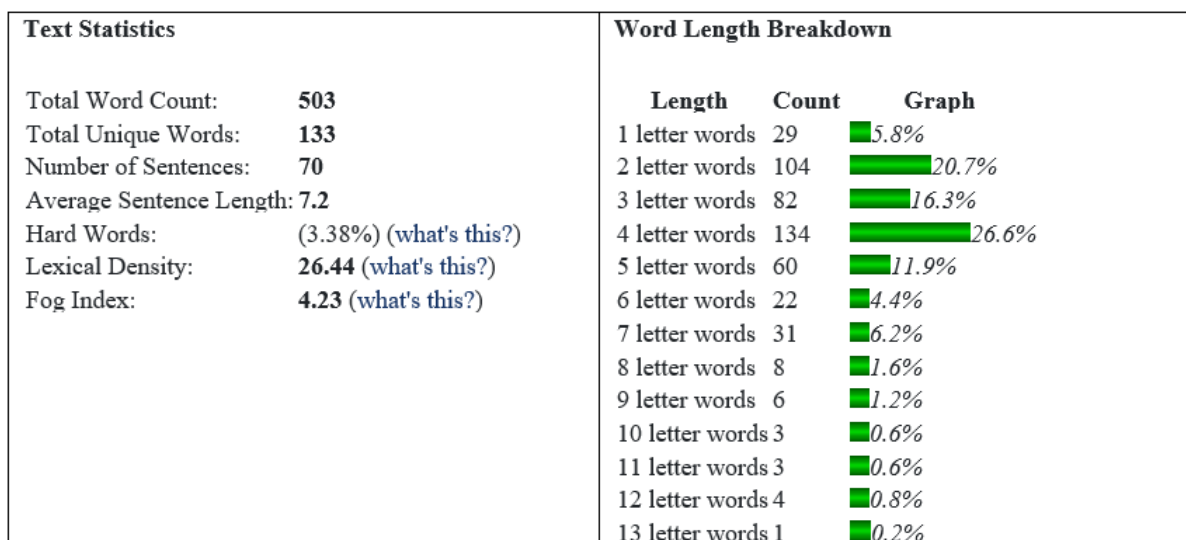
Figure 7. Text Statistics and Word Length Breakdown of Text 3

Text Statistics		Word Length Breakdown		
Total Word Count:	108	<b>Length</b>	<b>Count</b>	<b>Graph</b>
Total Unique Words:	60	1 letter words	4	3.7%
Number of Sentences:	17	2 letter words	17	15.7%
Average Sentence Length:	6.4	3 letter words	23	21.3%
Hard Words:	(9.26%) (what's this?)	4 letter words	24	22.2%
Lexical Density:	55.56 (what's this?)	5 letter words	14	13.0%
Fog Index:	6.24 (what's this?)	6 letter words	10	9.3%
		7 letter words	4	3.7%
		9 letter words	1	0.9%
		10 letter words	1	0.9%
		11 letter words	4	3.7%
		12 letter words	1	0.9%
		13 letter words	1	0.9%
		14 letter words	1	0.9%
		15 letter words	1	0.9%

Figure 8. Text Statistics and Word Length Breakdown of Text 4

Text Statistics		Word Length Breakdown		
Total Word Count:	186	<b>Length</b>	<b>Count</b>	<b>Graph</b>
Total Unique Words:	111	1 letter words	9	4.8%
Number of Sentences:	39	2 letter words	31	16.7%
Average Sentence Length:	4.8	3 letter words	41	22.0%
Hard Words:	(6.45%) (what's this?)	4 letter words	30	16.1%
Lexical Density:	59.68 (what's this?)	5 letter words	28	15.1%
Fog Index:	4.49 (what's this?)	6 letter words	14	7.5%
		7 letter words	6	3.2%
		8 letter words	7	3.8%
		9 letter words	8	4.3%
		10 letter words	3	1.6%
		14 letter words	1	0.5%

Figure 9. Text Statistics and Word Length Breakdown of Text 5



**Figure 10.** Text Statistics and Word Length Breakdown of Text 6

From the result word length breakdown as seen in Text 1 up to Text 6, each the text containing the shortest word is one letter and

the longest word is 16 letters, in details is described in Table 3 in the following.

**Table 3.** Word Length Breakdown of Transactional Texts

Text	Word Length Breakdown (letter words)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	16	37	41	56	19	25	10	9	7	5	1	1	0	0	0	1
2	10	51	25	40	25	31	21	15	6	4	2	0	0	0	1	1
3	11	27	45	57	27	13	17	6	4	1	2	4	1	0	2	0
4	4	17	23	24	14	10	4	0	1	1	4	1	1	1	1	0
5	9	31	41	30	28	14	6	7	8	3	0	0	0	1	0	0
6	29	104	82	134	60	22	31	8	6	3	3	4	1	0	0	0
<b>Average</b>	<b>13</b>	<b>45</b>	<b>43</b>	<b>57</b>	<b>29</b>	<b>19</b>	<b>15</b>	<b>8</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>

Table 3 illustrates the average of letter words in the six transactional texts. The highest number of the letter words average of the text transactional text is 57 words that containing 4 letter words while the lowest number is the words containing 14 and 16 letter words while the text analyzer of each text are detailed in the

following tables.

The total word count of T1 has 231 words, T2 has 232 words, T3 has 222 words, T4 has 108 words, T5 has 186 words, and T6 as the last text has 503 words. From the six texts, the highest total word count is T6 and the lowest is T4 as described in the Table 3. in the following.

**Table 4.** Total Word Count of Transactional Texts

1	2	3	4	5	6	Average
T6	T2	T1	T3	T5	T4	
503	232	231	222	186	108	247

The second focus is the total unique words. It is found that each transactional text has

various number as described in the following Table 4

**Table 5.** Total Unique Words of Transactional Texts

1	2	3	4	5	6	Average
T2	T1	T6	T3	T5	T4	
154	144	133	126	111	60	121

The Table 5 described that the highest number from the six transactional texts is different from Table 4. It is illustrated that the highest total unique words is T4 while the highest total word count in Table 4 is T6. It shows that the text containing many words does not mean have many unique words; it might be

that the text has many repeated words.

The third focus is the number of sentence and the average of sentence length in the six texts. From the six transactional texts, the highest total number of sentence is T6 while the highest average of sentence length is T2 as described in Table 6

**Table 6.** Number of Sentence and Average of Sentence Length

T1		T2		T3		T4		T5		T6	
26	8.9	22	10.5	31	7.2	17	6.4	39	4.8	70	7.2

The Table 6 illustrated that the transactional text containing the highest number of sentence is T6 but it does not mean that the text has the highest average of sentence length, since the highest average sentence length is T2. It can be understood that the text could have many sentences and the sentence could have few words.

The next focus is hard words. Every text also has various hard words. Hard words as mentioned earlier is the word that containing three syllables or more. From the six transactional texts, it is found that the text containing many hard words is T2; it reaches 14.10% while the lowest is T6 which containing 6.45% of hard words, in details are illustrated in Table 7,

**Table 7.** Hard Words (%) of Transactional Texts

1	2	3	4	5	6	Average
T2	T1	T3	T4	T5	T6	
15.09	10.82	10.36	9.26	6.45	3.38	9.2

The two next tables are the important part in deciding the readability of the of the transactional texts. They are lexical density and Fog Index of each text. The first main important is lexical density; the lexical density also has relationship with the grammatical intricacy. The text that has a higher lexical density will have a lower grammatical intricacy. On the other hand, the text that has a higher grammatical intricacy will have a lower lexical density.

Related to Ure (1971) in Johansson (2008), the lexical density is influenced by the number of lexical words (unique words in the Text Statistics) and the number of words (total word count in Text Statistics). The lexical density is designed to show how easy or difficult a text is to read. It means that the more various of the lexical words in a text so that the lexical density will be higher.

**Table 8.** Lexical Density of Transactional Texts

1	2	3	4	5	6	Average
T2	T1	T5	T3	T4	T6	
66.38	62.34	59.68	56.76	55.56	36.44	56.2

The Table 8 above described that T2 has the highest lexical density while T6 has the lowest lexical density and the average of the lexical density of the six transactional texts is

56.2. Related to the Mode Continuum the texts could be classified into written text since the score is 56.2 and the most written text based on the Mode Continuum is 7.

**Table 9.** Fog Index of Transactional Texts

1	2	3	4	5	6	Average
T2	T1	T3	T4	T5	T6	
10.25	7.88	7.01	6.24	4.49	4.23	6.7

The last table in this part is Table 9, this table describes the Fog Idext of the six transactional texts shown in Bahasa Inggris as

the English textbook for Grade X in Indonesia. The Table 9 illustrates that the highest Fog Index is T2 and the lowest is T6 while the



average of the six transactional Fog Index is 6.7. It means that the the transactional text level is various, from 4.23 to 10.25. Referring to the Heydari’s table (2012) in Sujatna (2017) about the relationship between Fog Index and Estimated Reading Grades, it shows that the average of the transactional text is in between sixth grade and seventh grade. It means that the texts could be categorized into Easy Reading

Range (Sixth Grade (6)–High School Freshman (9)).

#### IV. CONCLUSION

The transactional texts in *Bahasa Inggris* as one of the English textbooks for Grade X has been discussed and it could be summarized in Table 10.

**Table 10.** The Transactional Text Statistics in Bahasa Inggris for Grade X

T= Text	Total Word Count	Total Unique Words	No of Sentences	Average Sentence Length	Hard Words	Lexical Density	Fog Index
T1	231	144	26	8.9	10.82%	62.34	7.88
T2	232	154	22	10.5	15.09%	66.38	10.25
T3	222	126	31	7.2	10.36%	56.76	7.01
T4	108	60	17	6.4	9.26%	55.56	6.24
T5	186	111	39	4.8	6.45%	59.68	4.49
T6	503	133	70	7.2	3.38%	26.44	4.23

The data described in Table 10 related to three main things, firstly, the transactional text that has the highest number of words (530 words) that containing highest number of sentences could be categorized into the spoken text (lexical density= 26.44) and the level is under Easy Reading Range (Fog Index = 4.23) as described in T6. Secondly, the total unique words in transactional text has relation with hard words, lexical density and Fog Index as described in the T2. Thirdly, the lowest number of words could relate to the unique words and total number of sentences (as seen in T4).

As we know, the book Bahasa Inggris is one of the English textbooks recommended by the Ministry of Education and Culture which is published in 2017 (revised edition). To choose the transactional text given as the material in Bahasa Inggris, it is suggested that the writer of the book should consider the level of the transactional texts since the data shows that the level of the text is various (Fog Index 4.23 as the lowest – 10.25 as the highest) and the average transactional text level is 6.7.

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